3.1/57 $f(x) = [x]$

$[x]$ is the greatest integer that is less than or equal to x.

$f(0) = 0$

$f(1.6) = 1$

$f(-2.3) = -3$

$f(5-2\pi) =$

$f(5-6.28) =$

$f(-1.28)$

$= -2$

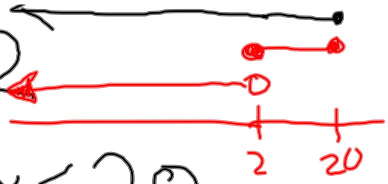
domain:

$(-\infty, \infty)$

range: integers $\mathbb{Z}$ ahlen

real numbers: $\mathbb{R}$

59) $f(x)=\begin{cases} x^2+2x & \text{if } x<2 \\ 3x-5 & \text{if } 2\le x\le 20 \end{cases}$



Piecewise-Defined Function

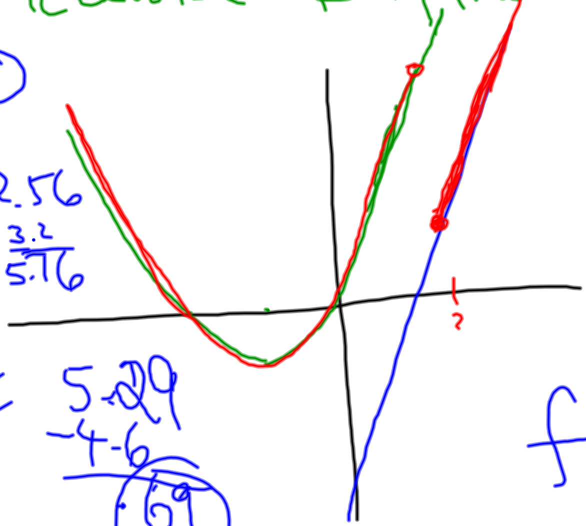
$f(0)=0$

$f(1.6)=2.56$

3.2

5.76

$f(-2.3)=$ 5.29 -4.6 $.69$



$f(5-2\pi)=$

$(5-2\pi)^2-2(5-2\pi)$

$f(15)=40$

$f(21)=$ undefined

Domain: $x\le 20$

$(-\infty,20]$

Range: $[-1,\infty)$

636 in 45

$$A = \pi r^2$$

$$d = 2r \qquad A = \pi\left(\frac{d}{2}\right)^2$$

$$\left(\frac{d}{2}\right) = r.$$

$$= \pi\left(\frac{d^2}{2^2}\right) = \frac{\pi d^2}{4}$$

55) $f(x) = -\sqrt{9-(x-9)^2}$

find "largest domain"

$\{x \mid (9-(x-9)^2) \geq 0\}$

$\{x : (9-(x-9)^2) \geq 0\}$

$9-(x-9)^2$

$9-(x^2-18x+81)$

$9-x^2+18x-81$

$-x^2+18x-72$

$(x-9)(x-9)$

72

$1 \cdot 72$

$2 \cdot 36$

$3 \cdot 24$

$4 \cdot 18$

$6 \cdot 12$

$8 \cdot 9$

$\{x : -x^2+18x-72 \geq 0\}$

$\{x : x^2-18x+72 \leq 0\}$

$\{x : (x-6)(x-12) \leq 0\}$

$x = 6, 12$

$+ + + \; [\, - \;\; - \;\; - \,] \; + + + +$

$0 \quad 6 \quad 10 \quad 12 \quad 1000$

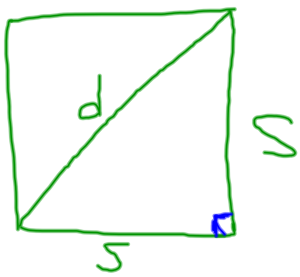
$\{x : 6 \leq x \leq 12\}$

$[6, 12]$

64b) area of a square

$$A = s^2 = \left(\frac{d}{\sqrt{2}}\right)^2 = \frac{(d)^2}{(\sqrt{2})^2} = \frac{d^2}{2}$$

b: in terms of the diagonal



$$d^2 = s^2 + s^2$$

$$d^2 = 2s^2$$

$$\frac{d^2}{2} = s^2$$

$$\frac{d^2}{2} = s^2$$

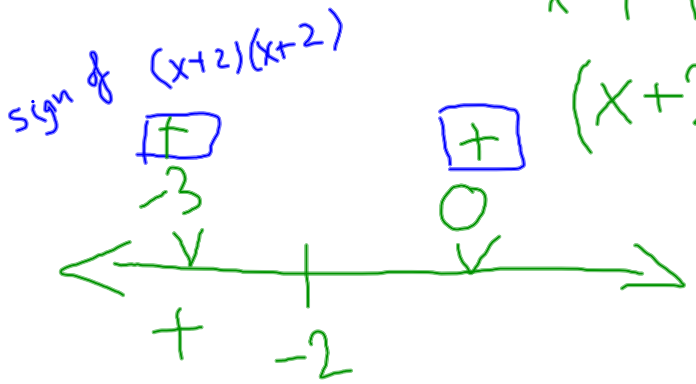
$$\sqrt{\frac{d^2}{2}} = s$$

$$\frac{\sqrt{d^2}}{\sqrt{2}} = s$$

$$\frac{d}{\sqrt{2}} = s$$

Sign Charts

$$x^2+4x+9 \ge 5$$
$$\quad -5 \quad -5$$
$$x^2+4x+4 \ge 0$$
$$(x+2)(x+2) \ge 0$$



$x = -2$